Remarks

Reconsideration of this patent application is respectfully requested, particularly as herein amended.

Following a summary of the status of this Patent Application, the Office Action of July 7, 2009, rejects claims 14 to 25 and 32 to 35 under 35 U.S.C. §112, first paragraph, for allegedly failing to comply with the enablement requirement.

Claims 14 to 25 are rejected because claim 14 recites "an isolating circuit coupled with the fluid transport circuit", and the position is taken that this "limitation is not described in the Specification of the Instant Application". This position is respectfully traversed in view of the disclosure provided in Figures 11 and 12 of the originally submitted drawings and from line 18 of page 13 through line 13 of page 14 of the English translation of the French text specification which was originally submitted when entering the national phase of the International Application on which the current U.S. Patent Application is based.

The referenced disclosure describes a fluid circulation layer 15 which is implemented as a follower layer, and isolating follower channels 23 (Figure 11) or an isolating follower layer 24 (Figure 12) which "are located at a constant or variable distance from the regulating follower layer (15)". The channels 23 and the layer 24 are provided "in order to limit the thermal conduction toward the sides... and/or toward the bottom... of

the mold..." and "form either an active isolation or secondary regulation, or a passive isolation" of the follower layer 15.

It is respectfully submitted that one skilled in the art to which this subject matter pertains would have understood this to constitute a coupling of the layer 15 with either the channels 23 or the layer 24, enabling one skilled in the art to which this subject matter pertains to make and/or use the invention as was previously recited in claim 14, and as is now recited in claims 13 and 15. Further support for this position is available with reference to page 338 of "Webster's New World Dictionary", a copy of which is submitted with this Reply. Reference is made to the first definition listed for the word "coupling", which is "a joining together; pairing", and the second definition for the word "couple", which is "two things of the same sort that are joined together or associated; pair". Reconsideration and withdrawal of the stated rejection of claims is, therefore, respectfully requested.

Claims 32 to 35 are rejected because claim 32 recites "a thermal barrier between the fluid transport circuit and the body of the part", and the position is again taken that this "limitation is not described in the Specification of the Instant Application". It is respectfully submitted that such structure was again described in the disclosure provided in Figures 11 and 12 of the originally submitted drawings and from line 18 of page 13 to line 13 of page 14 of the English translation of the French

text specification which was originally submitted when entering the national phase of the International Application on which the current U.S. Patent Application is based. Nevertheless, and in an effort to advance the prosecution of this Patent Application, the language of claim 32 has been amended to more closely follow the language originally presented in applicants' disclosure. It is respectfully submitted that this leaves moot the rejection of claims 32 to 35 under 35 U.S.C. §112, first paragraph, and reconsideration and withdrawal of this rejection of claims is respectfully requested.

The Office Action of July 7, 2009, next rejects claims 21 and 22 under 35 U.S.C. §112, second paragraph, as indefinite for reasons stated in the Office Action. Claim 13 has presently been amended to incorporate the subject matter of former claim 14, claim 15 has been amended to incorporate the subject matter of former claim 20 (claims 14 and 20 have been canceled), and claims 21 and 22 have been amended to depend from claim 15. It is respectfully submitted that this leaves moot the rejection of claims 32 to 35 under 35 U.S.C. §112, second paragraph, and reconsideration and withdrawal of this rejection of claims is respectfully requested.

The Office Action of July 7, 2009, next rejects claims 13 to 17, 20 to 24 and 26 to 31 under 35 U.S.C. §103(a) as being unpatentable over a proposed combination of the previously cited article authored by Choi et al. with U.S. Patent No. 5,847,958

(Shaikh et al.). Claims 18, 19, 25 and 32 to 35 are rejected over the proposed combination of Choi et al. and Shaikh et al., in further proposed combination with the previously cited patent of Sachs et al. (U.S. Patent No. 5,775,402).

As has previously been indicated, claim 13 has been amended to incorporate the subject matter of former claim 14. Further noted, however, is the italicized text that connects pages 6 and 7 of the Office Action of July 7, 2009, indicating that "the term 'isolating circuit' and 'fluid transport circuit' are being considered as referring to the same circuit" because former claim 14 was not considered to comply with the enablement requirement of 35 U.S.C. §112, first paragraph. It is submitted that, for reasons previously discussed, it has been shown that the subject matter of claim 14 was in full compliance with the enablement requirement of 35 U.S.C. §112, first paragraph, and that the "isolating circuit" and the "fluid transport circuit" recited in claim 14 were not properly "considered as referring to the same circuit". It is, therefore, respectfully submitted that this leaves moot the rejections of claims under 35 U.S.C. §103(a) in view of the proposed combinations of Choi et al., Shaikh et al. and Sachs et al. which are presented in the Office Action of July 7, 2009. Because such subject matter is currently recited in independent claim 13, a reconsideration of all pending claims is respectfully requested.

It is further submitted that the above-discussed

amendments to the claims operate to even more clearly identify significant and patentable distinctions present in applicants' claims, including the following.

Applicants' claims 13 and 15 are generally directed to a mold produced by computer-aided design which breaks down the body of the mold into elementary strata, followed by manufacture of the elementary strata and assembly of the manufactured strata to reconstruct the mold. As part of this, a fluid transport circuit and an isolating circuit are developed within the mold. The fluid transport circuit is broken down into a plurality of elementary chambers, which are produced in the manufactured strata during their manufacture, for reconstruction of the fluid transport circuit upon assembly of the manufactured strata. The isolating circuit is broken down into a plurality of elementary isolating chambers, which are also produced in the manufactured strata during their manufacture, for reconstruction of the isolating circuit upon assembly of the manufactured strata. Also related to this are newly presented claims 36 and 37, which are further directed to production of the elementary chambers and the elementary isolating chambers during the manufacture of the manufactured strata, including simultaneous production of the elementary chambers and elementary isolating chambers. Support for these features is provided in the original specification for this Patent Application, from line 25 to line 29 of page 13, and with reference to Figures 11 and 12 of the

originally submitted drawings.

Choi et al. disclose various methods for performing a computer-aided manufacture of structures from laminated sheets, including the method of "Stratoconception" that was identified in the specification for this Patent Application (e.g., at line 10 of page 4 of the original specification), and the disclosed methods have certain features in common with elements recited in applicants' claims. However, there are also significant differences between applicants' claims and the disclosure of Choi et al.

Some of these differences, pertaining to the recited fluid transport circuit, are noted at the middle of page 5 of the Office Action of July 7, 2009. Other differences, pertaining to the recited isolating circuit, are not specifically acknowledged in the Office Action. It is noted, however, that the patent to Shaikh et al. is cited for purposes of rejecting claims directed to the isolating circuit, and not the article of Choi et al. It is, therefore, respectfully submitted that Choi et al. also fail to disclose the isolating circuit recited in applicants' claims.

Shaikh et al. has been cited as a disclosure of the various elements recited in applicants' claims which are absent from the disclosure of Choi et al. It is submitted, however, that in view of the foregoing discussion, it becomes clear that Shaikh et al. do not, in fact, disclose the subject matter which is recited in applicants' claims, and reconsideration of the

patentability of applicants' claims is respectfully requested in view of the following.

As is noted in the Office Action, Shaikh et al. also disclose rapid prototyping methods including the machining of a plurality of thick stratiform members, in the nature of "slabs" (see, for example, lines 5 to 11 of column 3), and the disclosed methods have certain features in common with elements recited in applicants' claims resulting from the common features of a rapid prototyping process. However, Shaikh et al. do not disclose the manufacture of a mold having a fluid transport circuit which is coupled with an isolating circuit, in accordance with applicants' claims, or otherwise, or how such a mold is to be configured.

Although not cited in connection with applicants' claims 13 to 17, 20 to 24 and 26 to 31, the disclosure of Sachs et al. also fails to disclose a mold produced by computer-aided design which breaks down the body of the mold into elementary strata, followed by manufacture of the elementary strata and assembly of the manufactured strata to reconstruct the mold, and having a fluid transport circuit which is coupled with an isolating circuit, either in accordance with applicants' claims, or otherwise.

As a consequence, it is respectfully submitted that applicants' claims are directed to a method and a mold formed by such a method having features which are significantly and patentably different from the processes and parts disclosed by

Choi et al., Shaikh et al. and Sachs et al. Applicants' claims are further directed to the following distinguishing features, as well.

Claims 16, 17 and 27 to 29 are directed to the fluid transport circuit which is developed following reconstruction of the manufactured strata, including a fluid transport circuit which is capable of forming the three-dimensional network of channels shown in Figure 1 of the drawings (claims 16 and 28) and the layer-shaped chamber shown in Figure 5 of the drawings (claims 17 and 29). In accordance with the present invention, effective heat transfer is achieved with a fluid transport circuit formed either as a three-dimensional network or as a layer-shaped chamber, so that the mold always has an optimized thickness between the channels or the chamber and the surface of the mold. This is not disclosed by Choi et al., Shaikh et al. or Sachs et al.

Claim 19 is directed to a fluid transport circuit, interior portions of which have a plurality of transverse fins for mechanically reinforcing the fluid transport circuit and for stirring the circulated fluid. No such structure is disclosed by Choi et al. or Shaikh et al., and the fins 11, mounds 12, 14 and stubs 13 disclosed by Sachs et al. do not provide mechanical reinforcement of the channels which incorporate them. As a consequence, such structure is not disclosed by Choi et al., Shaikh et al. or Sachs et al.

Claims 21, 22 and 32 to 35 are directed to the isolating circuit which is coupled with the fluid transport circuit and which is also developed following reconstruction of the manufactured strata, including an isolating circuit which is capable of forming a three-dimensional network of channels and an isolating circuit which is formed as a layer-shaped chamber. In accordance with the present invention, problems such as excessive thermal inertia of the molds and the uncontrollable influence of external conditions on regulation of the manufactured molds are overcome by combining the fluid transport circuit with an isolating circuit in the form of a three-dimensional network of channels or a layer-shaped chamber, which can be filled by an insulating material, by air, or by a suitable heat transfer fluid. No such structure is disclosed by Choi et al., Shaikh et al. or Sachs et al. Also related to this are the adhesives recited in claim 23, which combine to provide the assembly of manufactured strata with appropriate mechanical properties while maintaining appropriate thermal conductivity through the resulting structure.

Claims 30 and 31 are directed to production of the manufactured strata, reciting formation of the elementary chambers in surface portions of the manufactured strata, to a depth less than the defined thickness of the manufactured strata, and combination of the elementary chambers with the surface portions of adjacent manufactured strata to form the fluid

transport circuit. Such features are not disclosed by Choi et al., Shaikh et al. or Sachs et al.

It is, therefore, respectfully submitted that applicants' claims are not subject to rejection under 35 U.S.C. §103(a) based on the disclosures of Choi et al., Shaikh et al. and Sachs et al., and that applicants' claims are in condition for allowance.

Corresponding action is earnestly solicited.

Respectfully submitted,

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I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office (Fax No. 571-273-8300) on: January 7, 2010 .

Date: 1/7/10 Gary M. Cohen, Esq.

territory. 2. in *English history*, formerly, a count or earl with supreme power in his county.

coun·tri·fied (kun'tri-fīd'), *adj.* [*country* + *-fy* + *-ed*]. 1. rural; rustic. 2. having the appearance, actions, etc. attributed to country people. Also spelled **countryfied**.

coun·try (kun'trī), *n.* [*pl.* COUNTRIES (-triz)], [ME. *contre, cuntre;* OFr. *contrée, cuntré;* LL. *contrata*, region, country, that which is beyond or over against (cf. G. *gegend*, district < *gegen*, against) < L. *contra*, opposite, over against], 1. a tract of land; area; region: as, wooded *country*. 2. a land; whole territory of a nation or state. 3. the people of a nation or state. 4. the land of a person's birth or citizenship. 5. land with few houses; rural region: contrasted with *city, town*. 6. any field of activity or sphere of knowledge: as, this subject is strange *country* to me. 7. in *law*, a jury: in reference to the fact that the jury was originally a group of men from the vicinity; jury trial was called *trial by the country*. *adj.* 1. of, in, or from a rural district. 2. like or characteristic of the country; rustic. 3. [Dial.], of one's own country; native.

go to the country, in Great Britain, to dissolve a parliament that has shown by vote that it disagrees with the cabinet, and call for the election of a new House of Commons.

country club, a club in the outskirts of a city or town, equipped with a clubhouse, golf course, etc.

country cousin, a person not used to city life and confused by it.

coun·try-dance (kun'tri-dans', kun'tri-däns'). *n.* a folk dance, especially one in which the partners form two lines facing each other.

coun·try-fied (kun'tri-fīd'), *adj.* countrified.

coun·try-folk (kun'tri-fōk'), *n.* people living in the country; rural people.

country gentleman, a man of some wealth who lives on a country estate.

country house, a house on a country estate; home of a country gentleman.

coun·try·man (kun'tri-mən), *n.* [*pl.* COUNTRYMEN (-mən)], 1. a man who lives in the country; rustic. 2. a man of one's own country; compatriot.

coun·try-seat (kun'tri-sēt'), *n.* a mansion in the country; rural estate of a landowner.

coun·try-side (kun'tri-sīd'), *n.* 1. a rural region; district of the country. 2. its inhabitants.

coun·try-wide (kun'tri-wīd'), *adj.* extending through an entire country or nation: as, a *country-wide* search.

coun·try-wom·an (kun'tri-woom'ən), *n.* [*pl.* COUNTRYWOMEN (-wim'in)], 1. a woman living in the country. 2. a woman of one's own country; woman compatriot.

coun·ty (koun'ti), *n.* [*pl.* COUNTIES (-tiz)], [ME. *conte;* OFr. *conté, cunté* (Fr. *comté*); LL. *comitatus*, office or jurisdiction of a count or earl < L. *comes;* see COUNT (nobleman)], 1. a small administrative district of a country; especially, *a*) a local administrative subdivision of a State, which in turn is divided into townships. *b*) [British], a shire considered as an administrative, judicial, and political district. Abbreviated Co., co. 2. the people living in a county. 3. [Obs.], *a*) the region governed by a count or earl. *b*) [OFr. *cunte;* see COUNT (nobleman)], a count or earl. *adj.* of a county.

county farm, a farm maintained by a county as a home for people without means of support.

county palatine, the land held by a count palatine.

county seat, a town or city that is the center of a county government.

coup (kōō), *n.* [*pl.* COUPS (kōōz; Fr. kōō)], [Fr.; LL. **colpus, colapus;* L. *colaphus*, a cuff, box on the ear; Gr. *kolaphos*], 1. literally, a blow. 2. a sudden, successful move or action; brilliant stroke; clever stratagem.

‡coup de grâce (kōō' də grās'), [Fr., lit., stroke of mercy], 1. the blow, shot, etc. that brings death to a sufferer; death blow; hence, 2. a finishing stroke.

‡coup de main (kōō' də man'), [Fr., lit., stroke of hand], a surprise attack or movement, as in war.

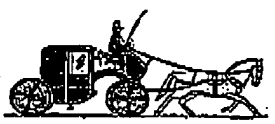
‡coup d'é·tat (kōō' dā'tä'), [Fr., lit., stroke of state], a sudden, forceful stroke in politics; especially, the sudden, forcible overthrow of a government.

‡coup de thé·â·tre (kōō' də tā'ä'tr'), [Fr., lit., stroke of theater], 1. a surprising or startling turn in a drama. 2. an action for sensational effect; theatrical action.

‡coup d'oeil (kōō' dā'y'), [Fr., lit., stroke of eye], a rapid glance; quick view or survey.

coupe (kōōp; *orig. but now less often*, kōō-pā'), *n.* [see COUPÉ], a closed, two-door automobile that seats two to six people; also coupé.

cou·pé (kōō-pā'), *n.* [Fr.; pp. of *couper*, to cut], 1. a closed carriage seating two passengers, with a seat outside for the driver. 2. in European railway cars, a half-compartment at the end, with seats on only one side. 3. a coupe: now the less common form of the word.



COUPÉ

Cou·pe·rin, Fran·çois (frän'swä' kōō'pran'), 1668–1733; French composer.

Cou·pe·rus, Louis (lōō-ē' kōō-pā'rəs), 1863–1923; Dutch writer.

cou·ple (kup"l), *n.* [ME.; OFr. *cople;* L. *copula*, a band, link; see COPULA], 1. anything joining two things together; bond; link; connection. 2. two things of the same sort that are joined together or associated; pair. 3. a man and woman who are engaged, married, or joined as partners in dances, games, etc. 4. [Colloq.], a few; several: as, I've a *couple* of things to do. 5. in *electricity*, two metals in contact with each other to form a galvanic or thermoelectric current; voltaic couple. 6. in *mechanics*, two equal forces producing rotation by moving in parallel but opposite directions. *v.t.* [COUPLED (-'ld), COUPLING], [ME. *couplen;* OFr. *cupler, copler;* L. *copulare* < *copula*], 1. to join together; link; connect. 2. to join in marriage. 3. in *electricity*, to join (two electric currents) magnetically or by direct connection. *v.i.* 1. to unite in a pair or pairs; pair. 2. to unite in sexual intercourse; copulate. —*SYN.* see pair.

cou·pler (kup'lėr), *n.* 1. a person who couples. 2. a thing that couples; specifically, *a*) a pneumatic device for coupling two railroad cars. *b*) in an organ, a device connecting two keyboards or keys an octave apart so that they can be played together.

cou·plet (kup'lit), *n.* [Fr., dim. of *couple;* see COUPLE], 1. two successive lines of poetry, especially two of the same length that rhyme. 2. [Rare], a couple; pair.

cou·pling (kup'liŋ), *n.* [see COUPLE, *v.*], 1. a joining together; pairing. 2. a mechanical device for joining parts together. 3. a device for joining two railroad cars together. 4. the part of the body of a dog, horse, etc. between the forequarters and hindquarters. 5. a method or device for joining two electric circuits for the transference of energy from one to the other.

COUPLING OF SHAFT

cou·pon (kōō'pon, kū'pon), *n.* [Fr., remnant, coupon < *couper*, to cut], 1. a detachable printed statement on a bond, specifying the interest due: the holder can present it for payment at the proper time. 2. a part of a ticket or a certificate given with packaged goods, entitling the buyer to a specified right, as an entertainment, redemption for cash or gifts, etc. 3. a part of a printed advertisement that can be used to order goods, samples, etc.

cour·age (kėr'ij), *n.* [ME. *corage;* OFr. *corage, curage*, heart, spirit < L. *cor*, heart], 1. the attitude or response of facing and dealing with anything recognized as dangerous, difficult, or painful, instead of withdrawing from it; quality of being fearless or brave; valor; pluck. 2. [Obs.], mind; purpose; disposition; spirit; temper.

the courage of one's convictions, the courage to do what one thinks is right.

cou·ra·geous (kə-rā'jəs), *adj.* having or showing courage; brave. —*SYN.* see brave.

cou·rant (kōō-rānt'), *n.* a courante.

cou·rante (kōō-rānt'; Fr. kōō'rānt'), *n.* [Fr. < *courant*, *ppr.* of *courir*, to run, glide; L. *currere*, to run], 1. an old, lively French dance with gliding or running steps. 2. the music for this dance.

Cour·bet, Gus·tave (güs'täv' kōōr'bā'), 1819–1877; French painter.

cou·ri·er (koor'i-ėr, kėr'i-ėr), *n.* [ME. *coreour* (OFr. *coreor*, LL. *curritor*); also ME. *courier* (OFr. *courreur, corrieu*); both < L. *currere*, to run], 1. a messenger, usually one sent in haste with important or urgent messages. 2. a person hired to accompany travelers and take care of hotel accommodations, luggage, etc.

cour·lan (koor'lan; Fr. kōōr'lāN'), *n.* [Fr. < Galibi *kurliri*, echoic of the cry], a tropical American bird resembling the rail.

Cour·land (kōōr'land), *n.* Kurland.

course (kôrs, kōrs), *n.* [ME. *cours*, course, running; also Fr. *cours;* both < OFr. *curs, cours* < L. *cursus*, pp. of *currere*, to run; also Fr. *course* < It. *corsa* < *correre* < L. *currere*], 1. an onward movement; going from one point to another; progress. 2. the progress or duration of time: as, in the *course* of a week. 3. a way, path, or channel of movement: as, a race *course*, golf *course*. 4. the direction taken: as, his *course* was due south. 5. a regular mode or manner of action or behavior; way of doing; as, the law must take its *course*. 6. a number of like things in some regular order; series. 7. regular or natural order or development: as, the *course* of true love. 8. a part of a meal served at one time: as, the main *course* was roast beef. 9. a charge or encounter of knights contesting in a tournament. 10. in *architecture*, a continuous layer of bricks, shingles, stones, wood, etc. on the face or roof of a building. 11. in *education*, *a*) a complete, progressive series of studies necessary for graduation, for a degree, etc. *b*) any of the studies; unit of instruction in a subject, made up of recitations, lectures, etc.: as, the psychology *course* was interesting. 12. in *nautical usage*, *a*) one of the sails on the lowest yard of a square-rigged ship. *b*) the point of the compass toward which a ship sails. *v.t.* [COURSED (kôrst, kōrst),